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Who Donates Better Blood for You Than You?

The AIDS epidemic has had a great many consequences, few of them positive. But one favorable result has been increased use of a transfusion procedure by which persons facing elective surgery can donate their own blood to themselves before that surgery. Many people have become concerned about being exposed to AIDS through blood transfusions. Even though the risk of transfusion-transmitted AIDS appears to be very small, some people may feel any risk is too great.

Thus, the growing preference for a procedure called autologous (au-*tol*-o-gous) blood donation. (Autologous means "related to self.") It is based on the fact that donating before surgery, and receiving your own blood during and after surgery, is better and safer than receiving someone else's blood. (Blood intended for use by someone other than the donor is known as "homologous.")

All volunteer homologous blood donations in the United States are now tested for the presence of many infectious disease markers such as the antibody to the human immunodeficiency virus (the virus that causes AIDS), hepatitis B surface antigen, antibody to HCV (non-A, non-B), and syphilis. Homologous blood units testing positive for these markers must be discarded. This makes the risk of transmitting a virus through a homologous blood transfusion almost nonexistent.

Some advantages to donating one's own blood for later use are:

- reduced risk of infectious disease transmission
- reduced risk of transfusion reactions related to differences between donor and recipient, such as blood type
- more rapid replacement by your body of blood lost during surgery, since the bone marrow where blood cells form has already been activated by the process of donating blood
- less demand on the community blood supply.

Conditions that might prevent someone from donating blood to others do not necessarily present autologous donations. For example, people who would be ineligible to donate blood because they are on medication or because they have other medical conditions may be able to donate autologously. Age limits and other restrictions on blood donors also may vary for the autologous donor. An underlying principle of good surgical practice is to keep bleeding to a minimum, and transfusions are not needed for most planned operations. (Emergency surgery and some medical conditions account for the majority of transfusions. For this, a public blood supply must be maintained.) However, there are some procedures (generally orthopedic, car-

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diac, chest, gynecological, and blood vessel surgery) in which enough blood will be lost to require transfusing. Although blood transfusion is rarely needed during pregnancy and delivery, autologous donations may be appropriate in rare circumstances.

When autologous donation is suggested, the patient's physician and the local blood bank medical director determine if such a donation is indicated. The major consideration is simply the health of the patient.

Autologous donations can provide some or all of the blood components needed for surgery. However, autologous donations may not completely eliminate the possibility that the specific operation might need additional blood from other donors. Occasionally, some people may not be able to donate enough of their own blood to meet their needs. But even partial use of autologous blood will reduce the chance of an infection or adverse reaction from a transfusion of blood from other donors.

A study of 180 patients scheduled for elective surgery at a Boston hospital found that most could donate a unit of blood a week without becoming anemic. When the study was completed, it was found that a third of the patients had required no transfusions at all during or after their surgery, and another third had used only their already donated blood. Only one-third of the patients needed blood donated by other persons.

Advocates of autologous donation believe that wider use of the technique could help prevent shortages in the national blood supply, and the Boston hospital study seems to support that. But even if that is true, autologous donation is not encouraged solely because of any real or perceived shortage. Many physicians and blood bank medical directors endorse autologous blood donations and transfusion simply because autologous blood is the safest blood for people to receive.

Until a decade ago almost no patients used autologous transfusions. Few hospitals or blood banks even offered the service, which was generally reserved for persons with rare blood types or medical conditions. Despite all its attractions, autologous blood is still a very small part of all blood transfused in the United States. Blood bank officials estimate that perhaps 10 percent of transfusions in this country are autologous. Yet, figures compiled by the American Association of Blood Banks show that the practice of autologous transfusion increased enormously during the 1980s. There was a 17-fold increase in the number of autologous units donated before surgery between 1982 and 1988, and the use of autologous donations continue to increase.

Exploring available autologous blood donation options is important when transfusions are indicated. Scheduling autologous donations requires good planning by the attending physician with the local blood donor center and the patient, but the actual procedure of donating autologous blood is relatively simple. If transfusion is likely for a planned operation, there is sometimes more than one option for autologous transfusion:

- autologous donation before the surgery
- salvaging blood during surgery and "recycling" it
- salvaging blood after the operation from a surgical wound.

Before Surgery

When autologous donation is suggested, the patient's physician will make arrangements with the local blood bank. How much and how often blood will be collected is decided by the physician. It's possible that iron supplements may be prescribed to build up the number of red blood cells to avoid anemia.

In autologous donation, a person can often give one unit of blood a week for up to six weeks, depending on the anticipated need. Each unit is just under a pint and is about 10 percent of the total blood supply of an average-size adult.

As the blood is taken, it is labeled for that patient's use and kept ready at the hospital for the operation. The last donation is usually made no closer than three days before the scheduled surgery. This allows the body time to replenish the fluid volume that has been removed.

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As liquid blood, the donated units can be kept for up to 42 days, depending on the preservative used. If the red blood cells are appropriately frozen, the units may be kept for as long as 10 years.

Blood Salvage During Surgery

During an operation, lost blood can be collected from the bleeding site and returned to the patient. This may be done manually or using automated equipment. The blood cells may be washed prior to "recycling," or the blood may be returned without additional processing.

Some hospitals and medical centers have been using this approach to reducing the use of homologous blood for several years for some cardiac and orthopedic procedures and organ transplants. Many surgical patients facing procedures likely to require transfusions can benefit from intraoperative blood salvage, especially in cases where preoperative donation is impossible or inadequate. However, in some cases blood salvage is not recommended, such as in patients with infections. Just like any medical therapy, "recycled" blood has some risks, so patients should discuss this procedure with the physician, surgeon, and hospital to determine if it is right for them.

Blood Salvage After Surgery

Postoperative blood salvage is another technique of autologous transfusion in which blood is collected from the wound site *following* major surgery for reinfusion to that patient. This procedure is much less common, but its use is increasing for some selected orthopedic operations. Postoperative blood salvage may also be useful in heart surgery. Again, this procedure should be discussed with the physician.

What Does FDA Think About Autologous Blood?

Increased interest in autologous blood has prompted FDA's Center for Biologics Evaluation and Research to update recommendations and interpret existing regulations on collecting, handling, storing, shipping, and using autologous blood.

FDA recommends that all the tests required for homologous blood also be done for autologous blood. Many physicians and blood bank staff working with autologous blood also feel it should be tested for infectious agents at the time it is taken. If a unit fails one of the required tests, FDA recommends that it not be used. However, those units or blood components may be used for autologous transfusion if the patient's physician requests it in writing.

Unused autologous units may be destroyed or added to the homologous blood inventory if they have met all FDA requirements, including testing for infectious agents.

Blood banks and other facilities where blood is taken from donors follow these standards for procedures, equipment and staff. FDA is responsible for ensuring the safety of the nation's entire blood supply, which includes autologous blood and blood products. To that end, FDA routinely inspects blood donor centers to ensure that these strict standards are maintained.

If You Are Facing Surgery . . .

For most types of planned surgery, patients generally lose so little blood that they don't need blood transfusions. If you are going to have an operation, check with your doctor as soon as possible about your need for blood. Before determining that you should donate your own blood, your doctor must decide if the benefits outweigh any potential risks to you. However, when a transfusion is likely, use of autologous donations can decrease or eliminate exposure of patients to homologous blood. Although the risks of transfusion with homologous blood are very low, autologous transfusion remains the safest option for some patients. A "team approach" with your doctor, the blood collection facility, and you, the patient, is needed to determine what the safest autologous transfusion procedure may be. ■

A Blood-Chilling Experience

As public interest in blood donations has increased, a number of entrepreneurs have entered the market. These facilities will—at their locations around the country—collect, freeze and store your blood, and then deliver it to you—thawed and ready to use—when and if your physician calls for it.

Costs can be high, and shipping charges may be added. There is no guarantee the blood would be available when needed or that there would be time to thaw and ship it. (Under present FDA regulations, frozen blood may be kept for only 10 years and cannot be shipped between states.) In addition, frozen blood contains only red blood cells. If you need blood platelets or plasma, you may have to turn to the public blood supply.

The National Institutes of Health and several other health-care centers endorse the use of autologous blood for elective surgery. But long-term storage or stockpiling with no indicated medical need is not routinely endorsed in this country. Many physicians feel there is no reason for healthy people to stockpile their own blood if they are not current candidates for surgery. It is recommended that you discuss any upcoming operation with your doctor to determine if you will need blood and, if so, what the safest procedure will be for you. ■

Seven Important Questions to Ask Your Doctor

1. Will I need blood for my operation?
2. Can I give blood in advance in case I need it?
3. Is there enough time before the operation to give the blood I will need?
4. Where should I go to give blood for my operation?
5. Can my blood be saved during the operation and given back to me if I need it?
6. What are the risks in giving or receiving my own blood?
7. Will I have to pay extra if I use my own blood?

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